RAILWAY BOGIE

FIELD OF THE INVENTION

[0001] The invention relates to a railway bogie comprising at least two spring units per one wheel and a bogie frame.

BACKGROUND DISCUSSION

[0002] From UIC standard a bogie with helical springs is well known in which the axlebox suspension consists of helical springs in combination with friction damping. The springs rest on support arms integral with the lower part of the axlebox housing and are connected with the bogie frame using caps integral with the bogie frame for taking up the top of the springs.

[0003] US 2002-0089 102 A1 discloses a hydraulic spring comprising a membrane. This document discloses that the hydraulic spring is for use in rail vehicles especially as a primary spring.

[0004] Further, the catalogue of the company ContiTech Luftfedersysteme GmbH in Hannover, Germany, "Air Spring Systems for Modem Rail Vehicles", printed and distributed in October 1998, discloses the use of hydraulic springs comprising a membrane in two-axle bogies.

[0005] One object of the present invention is to provide an improved railway bogie comprising at least two spring units per one wheel and a bogie frame, so that various types of spring units in connection with also various types of axleboxes having all

diverse dimensions can be connected to the bogie frame having standardized dimensions in an easy and reliable manner.

SUMMARY

[0006] A railway bogie comprises at least two spring units per one wheel, a bogie frame, and an essentially single piece adapter which bridges the spring units and is arranged between the spring units on the one side and the bogie frame on the other side.

[0007] The adapter is used in an advantageous manner to adapt various types of spring units in connection with various types of axleboxes having all diverse dimensions to the bogie frame having standardized dimensions without the need of modifying the bogie frame. Just the adapter is modified according to the used type of spring units and axlebox, whereby any modifying of the adapter can be done more easily and in a more cost-efficient way than it could be done with the bogie frame itself.

[0008] With the accurately pre-fabricatable adapter it can further be assured that the two spring units are mounted to the bogie frame exactly with a prescribed distance between the principal axes of the two spring units, whereby every deviation from the prescribed distance would result in a tangential deviation of the spring units and therewith in an undesirable modification of the spring characteristic.

BRIEF DISCUSSION OF THE DRAWING FIGURES

[0009] Further advantages, features and details of the invention are described with respect to one preferred embodiment of the invention with reference to the accompanying drawings briefly described below.

[0010] Figure 1 is a longitudinal cross section in the region of one wheel of a bogie.

[0011] Figure 2 is a sectional view along the line B-B of Figure 1.

DETAILED DESCRIPTION

[0012] Figure 1 shows a longitudinal cross-section in the region of one wheel 2 of a bogie of the so-called Y 25 type, whereby the cut is directed according to a plane being defined by the axes of rotational symmetry of a first and second hydraulic spring. The pictured section of the bogie comprises an axlebox 10 with a rolling bearing 4 mounted in a middle region of the axlebox 10. The rolling bearing 4 supports one end of one of the two axles of the bogie.

[0013] A base of the axlebox 10 is extended to the left and the right side forming a cup shaped region 12 at each of the sides. Each of the hydraulic springs comprises a spring element 20 which is attached to each of the cup shaped regions 12 of the axlebox 10. A metallic centerpiece 26 is located in the center of each of the spring elements 20.

[0014] These two centerpieces 26 are attached to one bridging adapter 50. Therefore the centerpieces 26 and the bridging adapter 50 have bores for connecting the centerpieces 26 with the bridging adapter 50 via two bolts 52 pictured uncut in

Figure 1 and 2. In other embodiments, the bolts 52 can be integral parts of the centerpieces 26 or of the bridging adapter 50 or the centerpieces 26 can be connected to the bridging adapter 50 by any other connecting means.

[0015] The bridging adapter 50 is attached to a longeron of a frame 6 of the bogie. This longeron extends in a longitudinal direction parallel to the rails and is pictured uncut in Figure 1. Preferably the bridging adapter 50 is connected to the bogie frame 6 by welding.

[0016] In the following description, just the left cup shaped region 12 in connection with the left spring element 20 is described in detail, because the same applies to the right cup shaped region 12 in connection with the right spring element 20. Figure 2 shows a sectional view along the line B-B of Figure 1. The spring element 20 comprises sleeve shaped elastomeric elements 22 and intermediate sleeve shaped metallic elements 24 in an alternating succession, whereby the elastomeric and the metallic elements 22 and 24 are connected by way of vulcanization. Also the centerpiece 26 is connected by way of vulcanization to its adjacent elastomeric element 22.

[0017] The spring element 20 is secured to the respective cup shaped region 12 of the axlebox 10 via a sealing ring 42, which is attached to the axlebox 10 via screws 44. In other embodiments the spring element 20 also can be directly vulcanized to the cup shaped region 12. The spring elements 20 forms together with the respective cup shaped region 12 of the axlebox 10 a volume for a fluid 30, particularly a hydraulic fluid. This volume is at least partly filled with the fluid 30. The centerpiece 26 is prolonged into the volume forming a plunger shaped region 28.

Thereby at least a disk shaped region at the end of the plunger shaped region 28 is dipped into the fluid 30, so that this arrangement fulfils the function of a damper. The cup shaped region 12 of the axlebox 10 together with the respective spring element 20 and the fluid 30 form together the hydraulic spring.

[0018] In another embodiment of the invention, a hydraulic spring can be used, e.g. according to the already cited US 2002-0089102 Al, comprising a membrane instead of the plunger shaped section 28 of the centerpiece 26, whereby the cup shaped region 12 of the axlebox 10 is then also one part of the housing of the hydraulic spring.